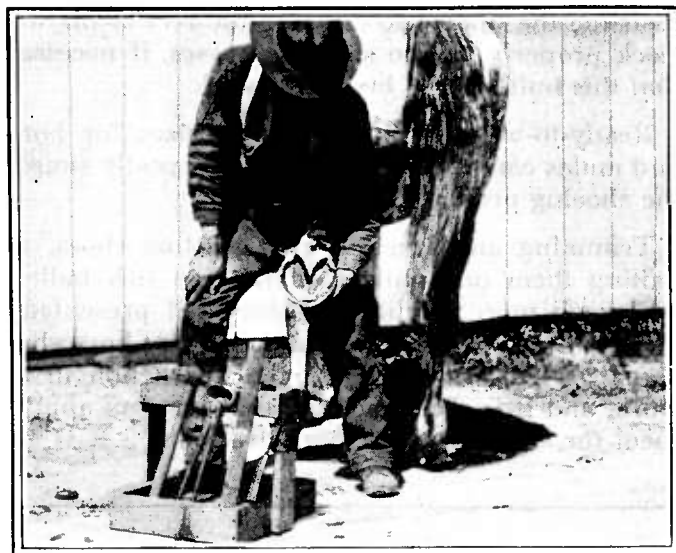


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U. S. DEPARTMENT OF
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FARMERS' BULLETIN No. 1535

FARM
HORSESHOEING



THE SHOEING of farm horses in the United States in the past was done largely by the trained farrier, whose shop in every village and hamlet was a familiar institution. The advent of hard-surfaced roads and motor vehicles has been accompanied, in many localities, with a transformation of our countryside, in which the village blacksmith shop has gradually been supplanted by gas stations and garages, so that the problem of shoeing farm horses is a serious one in many communities.

The solution of the problem in a large measure devolves upon the farmer himself in learning to do the work on his own farm. It is for the purpose of assisting the farmer to care for the feet of his work stock properly and to shoe his horses, if necessary, that this bulletin has been prepared.

Ready-to-wear shoes of various sizes for horses and mules can now be obtained and greatly simplify the shoeing problem for farmers.

Trimming and leveling hoofs, fitting shoes, and nailing them on, while explained in this bulletin, are much more readily understood if presented in an actual demonstration by a competent horseshoer. Many agricultural colleges give instruction in this work, and it is recommended that farmers apply to them for a community demonstration.

FARM HORSESHOEING

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NO. FOOT—NO HORSE is a time-honored adage among horsemen. It is a phrase which may be interpreted almost literally so far as the serviceability of horses is concerned. Bad feet incapacitate draft horses on hard pavements and very materially reduce the efficiency of horses for any work. It is vital, therefore, to consider carefully the principles involved in the proper care of the hoof, and in shoeing horses so that they may be kept in service and so that their sale value may not be impaired. Improper care of the hoof and improper shoeing frequently lead to diseases of the feet and irregularities in gait, which may render the horse unserviceable and unsalable.



FIG. 1.—Long, poorly kept forefeet; left shoe off for several days. Note the cracks developing in the wall and the broken wall in the outside quarter

THE NEED FOR SHOEING FARM HORSES

Using unshod horses and mules for pulling heavy farm machinery wears off the horny wall of the foot at the ground surface more rapidly than growth is supplied from above and will result in tender feet. In many cases the wall will split, break, or separate from the sole of the foot (as in fig. 1) and permit small stones or gravel to

become embedded and cause serious lameness. This may occur during peak periods of work, when the animal is most needed in carrying on farm operations, and delay the farmer in getting important work done. A well-shod horse not only is kept in service but he is a more efficient worker in that he can better apply his strength because he has a better footing. The better footing makes him a better puller. It is important, however, that shod horses have regular attention—that about every four to six weeks the shoes be removed, the hoofs trimmed, and the shoes refitted. Permitting the shoes to remain on the foot too long sometimes results in foot troubles, such as corns and sidebones. Good shoeing, properly taken care of, will increase the serviceability of the animal and add to his sale value.

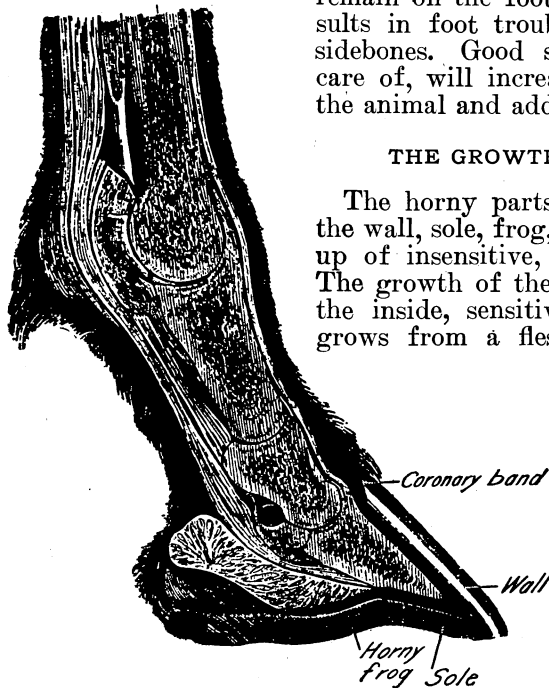


FIG. 2.—Vertical section through middle of forefoot. In trimming or shoeing the foot be careful not to injure the inside, sensitive structure

THE GROWTH OF THE HOOF

The horny parts of the hoof consist of the wall, sole, frog, and bars, and are made up of insensitive, horny cells. (Fig. 2.) The growth of the hoof, however, is from the inside, sensitive structure. The wall grows from a fleshy band, the so-called coronary band, which lies on top of the wall (hair line). It grows in a straight, downward, and forward direction. The average rate of growth is estimated to be about one-fourth to three-eighths of an inch a month in a normal animal. The wall is that portion of the hoof to which the shoe is nailed. The horny sole grows

from the fleshy sole and grows solid to a certain extent. As it continues to grow the old sole will crack and check, and a network of small, black lines will be formed all over the bottom of the sole. The horny frog grows from the fleshy frog and is a cushiony, elastic wedge between the bars and the edges of the sole in front of the bars. In unshod hoofs the bearing edge of the wall, the sole, frog, and bars are on a level, and each of these structures assists in bearing the body weight. The bars are extensions of the wall from the heel along the sides and to the point of the frog. The purpose of the bars is to assist in absorbing the shock when the foot strikes the ground. As the function of the bars is important, they should not be cut away in trimming the hoof. Contracted heels will result if the bars are cut away.

TRIMMING THE COLT'S FEET

The newborn foal has a rather pointed, narrow hoof, which is very soft, and the bottom is covered with a thick cushion of soft, horny material. This, however, falls off in a few days, and the development of the permanent hoof begins. The horny sole begins to grow in an arch shape, and the new wall grows down from the coronary band. In a few weeks there is a distinct difference between the old and the new horny mass in that a complete ring forms around the hoof. The new hoof is circular and spreads considerably at the sole surface, and the leg assumes its natural shape. The foot becomes more slanting from the fetlock joint down, and during the first few weeks there is very little to be done to improve the standing position of the legs. A little later, however, when much can be done toward developing normal conformation by the proper trimming of the little hoof, one should carefully observe the development of the legs. When the colt

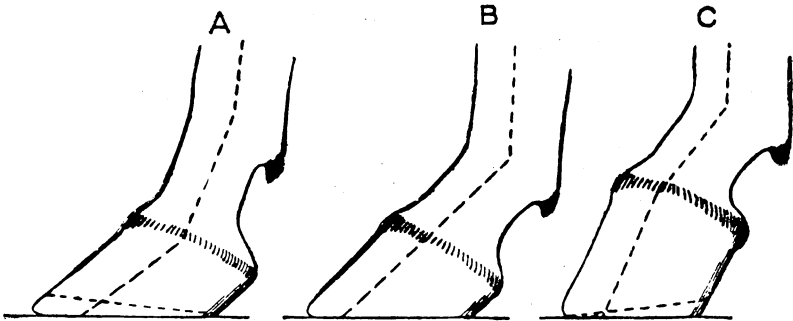


FIG. 3.—Legs and hoofs in profile: A. Side view of foot with foot axis broken backward as a result of too long a toe. The amount of horn to be removed from the toe in order to straighten the foot axis is denoted by a dotted line. B. Side view of a properly balanced foot, with a straight foot axis of desirable slant. C. Side view of a stumpy foot with foot axis broken forward as a result of overgrowth of the quarters. The amount of horn to be removed in order to straighten the foot axis is shown by a dotted line.

is three months old one can begin using the hoof knife for trimming the feet. To do this work properly, first observe the standing position of the front legs from the side. If the leg is placed too far forward it is an indication that the toe is too long. (Fig. 3.) By close examination of the hoof it will be found that the heels are curving under and that the toe is growing in a straightforward direction. If the hoof is trimmed in the manner described, the legs will take their proper position. Now, observe the hind legs. One will usually find that the legs are too straight from the fetlocks down, because the heels are long. If the heels are pared down, the legs will assume a more normal position. By observing the colt from the rear and the front it will usually be found that its legs are "base wide" or in a spreading position. As the colt matures, this condition usually corrects itself. By closely observing the colt occasionally, possibly once a month, and keeping the hoofs properly trimmed, one can do much to promote the development of a normal conformation, which brings good returns to the owner.

The colt should have abundant exercise on dry ground. The hoofs will then usually wear gradually, and it may be necessary only occasionally to rasp and round off the sharp edges around the toe in order to prevent the breaking away of the wall. Colts in the stable, however, can not wear down their hoofs; therefore the feet of such colts should be rasped down every few weeks. The soles and clefts of the frog should be picked out every few days and the entire hoof washed out thoroughly.

TRIMMING THE FOOT FOR SHOEING

Before beginning the trimming of the hoof one must observe the standing position of the limbs, particularly from the fetlock joint down. The position of the foot must correspond to the angle of the leg, as indicated in Figure 3, B. If the standing position of the foot is too slanting it is an indication that the toe is too high, and



FIG. 4.—An untrimmed foot



FIG. 5.—An untrimmed foot. Note the long heels

a line, the so-called foot axis, is broken backward. Reducing the toe will change the angle and bring the foot axis into a straight line.

After the standing position has been observed, raise the foot and begin with the hook knife to remove the overgrowth of the sole, starting at the quarter. This overgrowth is indicated by cracks and checks and loose material. (Figs. 4, 5, and 6.) It should be removed down to the solid sole. The solid sole should not be touched under any circumstances, as the horse needs this as a protection for the inner organs of the foot. After the sole is cleaned the wall extending far beyond the sole can be reduced to its normal length with hoof cutters, as shown in Figure 7. The amount of cutting is determined by the upper edge of the trimmed sole; in other words, the hoof cutters will follow the upper border of the trimmed sole all the way along the hoof, and by so doing give the heel and toe the proper length. (Figs. 9, 10, 11, and 12.) After this is done

the hoof rasp should be held in a level position and the hoof sole rasped so that the wearing surface is in a level plane, as shown in Figure 8. One can observe this plane level in the position illustrated on the title-page of this bulletin, which shows also the proper method of holding the horse's foot. The handy shoeing outfit illustrated consists of a box, hammer, clinch cutter, large pincers for pulling shoes, hoof knife, and hoof cutters, and a pair of small pincers for pulling and cutting nails.

FITTING THE SHOE

The hoof is now ready for the fitting of the shoe. For ordinary farm work the shoe does not need to extend much beyond the end of the wall. The type of shoe, whether calked or plain, depends largely on the work which the animal performs. The plain shoe should be even with the end of the wall. If a calked shoe is needed, it is necessary that the shoe be a trifle longer. In fitting the shoe



FIG. 6.—A bad break in the wall, caused by neglect in trimming and shoeing



FIG. 7.—Proper use of the hoof cutter



FIG. 8.—Proper position of rasp in levelling hoof



FIG. 9.—A hoof which has been properly trimmed on one side; the other half is untrimmed. Note the difference especially in the amount of trimming necessary to balance the foot properly. Note the bars

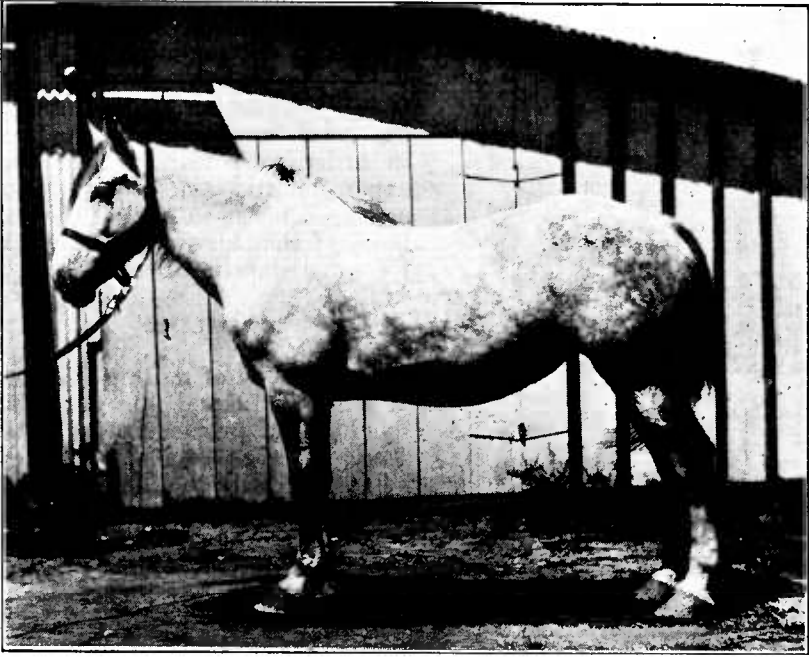


FIG. 10.—Mare with untrimmed feet. Note the long, slanting position of the foot from the fetlock to the ground

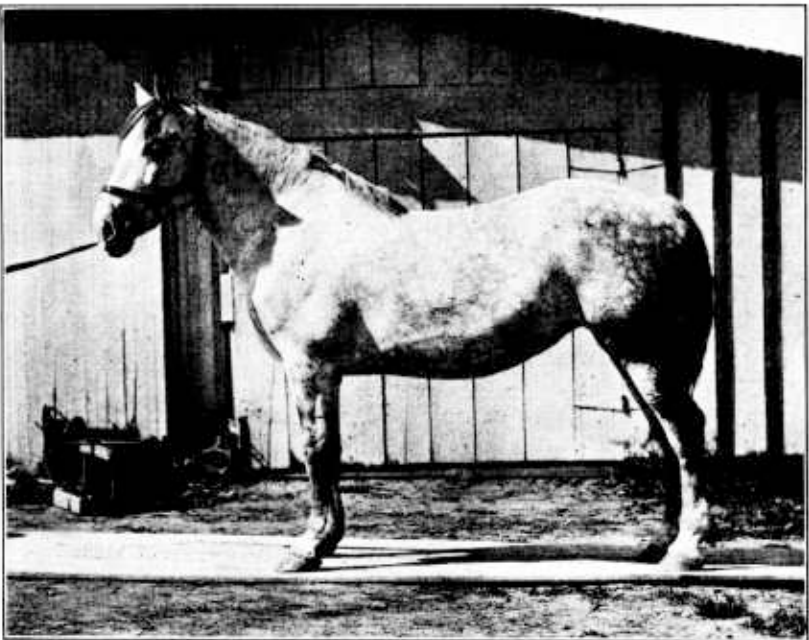


FIG. 11.—Trimmed feet. Note the corrected position of the feet and compare their position with that shown in Figure 10

it is necessary to give an absolutely even fit, as the outline of the hoof shows. In other words, fit the shoe flush with the outline of the outer border of the wall. The heels of the shoe should be well

under the heels of the wall; this is very important, as the heels of the hoof must rest on the iron in order to permit proper hoof expansion and contraction. Good nailing consists in having the nail holes of the shoe well punched in the same slanting direction as the wall.

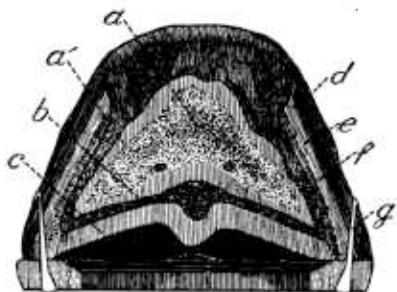


FIG. 12.—Vertical cross section of well-shod hoof showing correct position of nails: *a*, pedal bone; *a'*, outer layer of pedal bone; *b*, sensitive sole; *c*, horny sole; *d*, horn wall; *e*, outer layer of laminae; *f*, laminae; *g*, nail.

NAILING

The method of nailing is shown in Figures 12 and 13. The nail should be of proper size to fit the shoe. As seen in Figure 13, the nail is held with the thumb and index finger, the other fingers lying

against the wall to guide the direction of the nail, and the shoe is held in position, the hand resting on the shoe to hold it in proper



FIG. 13.—Proper method of nailing a shoe on. Note position of hands

position in driving the outside nail first. (Fig. 13.) The nail should be driven just outside that portion of the wall known as the "white line," so called because of its well-defined "white" appearance. Be

careful not to allow the nails to go inside this line into the sensitive portion of the foot. The proper course of the nail is shown in Fig. 12. After the first nail is driven it is best to make sure that the shoe is in

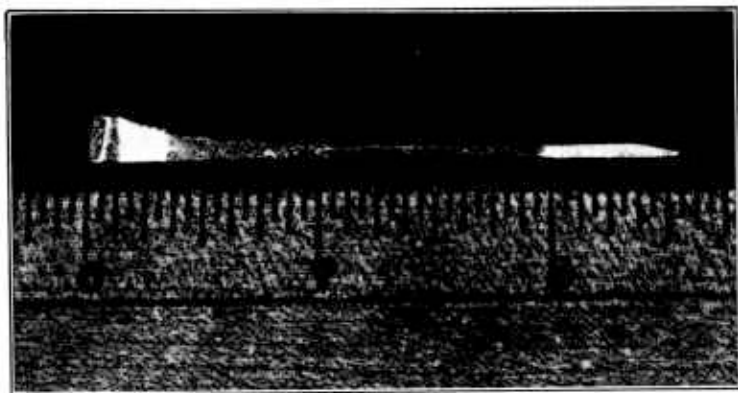


FIG. 14.—The nails used for shoeing horses have one straight side, and the other side is beveled at the point. In driving a nail, the straight edge should always be held to the outside, the beveled point to the inside. This will guide the nail out through the wall. The nail should be driven just outside the "white line" described in the text

its proper place. Then the nail on the opposite side is driven, and so on until the nailing is completed. In tightening the nails, a clinching block or the pincers should be held underneath the nails, and the



FIG. 15.—Proper method of clinching the nail. Note position of hammer and clinch block

head driven with the hammer tight into the crease of the shoe. In clinching the nails, as shown in Figure 15, the foot is brought forward on the knee of the operator, and the nails are cut close to the wall, and



FIG. 16.—Plate shoe, well fitted

with the rasp a clearing cut is made underneath the nail on top of the wall. Cut or twist off end of nail with pincers or claw of hammer; place the clinching block underneath the nail, and with the hammer

bring the nail over in a small, bending form so as to form the clinch. With the hoof rasp smooth or rasp over the rough spots on the outside. Rasping the outside of the wall should be avoided as much as possible. Figure 16 shows a plate shoe, well fitted.



FIG. 17.—Well-shod feet

READY-TO-WEAR SHOES

Horseshoe manufacturers are now making and distributing horse and mule shoes of all types (figs. 18 to 21) suitable for shoeing farm work stock. In

many places they can be obtained at the general store or from the local hardware merchant.

In using the ready-to-wear shoe it is important that the farmer exercise particular care in measuring the feet of horses or mules to



FIG. 18.—Ready-to-wear shoe. Plain shoe



FIG. 19.—Ready-to-wear shoe, with toe and heel calks

be shod before he purchases the shoes. The following system of measurement should be applied: After the feet are trimmed (one front foot and one hind foot), measure the width of the foot, in



FIG. 20.—Ready-to-wear mule shoe, with toe and heel calks



FIG. 21.—Ready-to-wear mule shoe, with heel calks

inches, and the length of the foot from heel to toe, making sure, however, that an allowance of at least one-half inch is made in the length of the shoe beyond the wall of the foot at the heel.

RUBBER SHOES AND RUBBER HOOF PADS

Because horses are often worked on hard-surfaced streets and highways, the use of rubber shoes and rubber hoof pads has become common. These modern devices not only relieve sore and lame horses, but many times prevent corns and other foot sorenesses and lengthen the usefulness of horses used on hard surfaces. This type of shoeing is also valuable in preventing slipping on such surfaces and reduces to a minimum the number of injuries to horses caused by falling. Hoof pads and rubber shoes should be used as a preventive rather than as a cure for the many leg ailments caused by the constant use of horses on hard-surfaced roads.

Rubber pads are not recommended for horses that work on the farm, as the soil works it way under the pad, causing lameness by extra pressure in the navicular joint. Whenever rubber pads are used, pine tar with a thin layer of oakum should be applied to the sole to keep it moist and prevent contraction.

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July 11, 1927

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